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ABSTRACT

This document of skill standards for the greenhouse/nursery cluster serves as a guide to workforce preparation program providers in defining content for their programs and to employers to establish the skills and standards necessary for job acquisition. These 23 occupational skill standards describe what people should know and be able to do in an occupational setting. Each skill standard contains at least these three areas: performance area (summary of work to be performed); skill standard with conditions of performance, work to be performed, and performance criteria; and performance elements and assessment criteria. These sections may also be included: performance area and assessment and credentialing approach. Introductory materials include the developmental process; assumptions for greenhouse/nursery cluster standards; table of contents; and performance skill levels. Skill standards include: assist in erecting greenhouses and other facilities; select, operate, and maintain tools and equipment; prune plants; propagate and grow plants; plant and care for potted plants; and analyze, interpret, and enhance substrate fertility and water quality. Appendixes include a glossary; lists of committee and council members; and workplace skills. (YLB)

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ILLINOIS

OCCUPATIONAL SKILL STANDARDS

GREENHOUSE/ NURSERY CLUSTER

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ILLINOIS OCCUPATIONAL SKILL STANDARDS
GREENHOUSE/NURSERY CLUSTER

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ILLINOIS OCCUPATIONAL SKILL STANDARDS

GREENHOUSE/NURSERY CLUSTER

Endorsed for Illinois
by the
Illinois Occupational Skill Standards and Credentialing Council

MESSAGE TO ILLINOIS CITIZENS

Dear Citizens of Illinois:

Preparing youth and adults for entry into the workforce and the ability of individuals to contribute to society throughout their lives are critical to the economy of Illinois. Public and private interest in establishing national and state systems of industry-driven skill standards and credentials is growing in the United States, especially for occupations that require less than a four-year college degree. This interest stems from the understanding that the United States will increasingly compete internationally by increasing the skills and productivity of the front-line workforce. The major purpose of skill standards and credentialing systems is to promote education and training investment and ensure that this education and training enable students and workers to meet industry standards that are benchmarked to our major international competitors.

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) has been working with industry subcouncils, the Illinois State Board of Education and other partnering agencies to adopt, adapt and/or develop skill standards for high-demand occupations. This document represents the work of the Agriculture and Natural Resources Subcouncil and the associated standards development committee. Through this collaborative effort, skill standards products are being developed for a myriad of industries, occupational clusters and occupations. Upon completion of these products, there will be a period of feedback and comment from business, industry and labor representatives, as well as educators.

These documents will serve as guides to workforce preparation program providers to define content for their programs and to employers to establish the skills and standards necessary for job acquisition. These standards will also serve as a mechanism for communication among education, business, industry and labor.

We encourage you to review these standards and share your comments. This effort has involved a great many people from business, industry and labor. Comments regarding their usefulness in curriculum and assessment design, as well as your needs for inservice and technical assistance in their implementation, are critical to our efforts to move forward and improve the documents. A feedback instrument is included with this document.

Questions concerning this document may be directed to:

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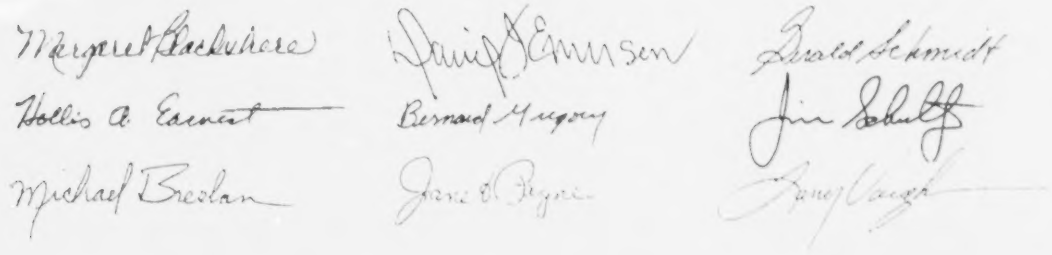
We look forward to your comments.

Sincerely,

The Members of the IOSSCC



THE ILLINOIS PERSPECTIVE

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) endorses occupational skill standards and credentialing systems for occupations that (a) require basic workplace skills and technical training, (b) provide a large number of jobs with either moderate or high earnings, and (c) provide career advancement opportunities to related occupations with moderate or high earnings. The nine-member Council was established by the Occupational Skill Standards Act (PA 87-1210). The council, representing business, industry and labor and working with the Illinois State Board of Education in partnership with the Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Employment Security and Illinois Department of Commerce and Community Affairs, has created a common vision for workforce development in Illinois.

Vision

It is the vision of the IOSSCC to develop a statewide system of industry-defined and recognized skill standards and credentials for all major skilled occupations providing strong employment and earnings opportunities in Illinois. Information related to occupational employment and earning opportunities is determined by the Illinois Occupational Information Coordinating Committee (IOICC) in cooperation with business and industry.

Subcouncils and Standards Development Committees

The Council developed industry subcouncils (representing all major industries in Illinois) to review, approve and promote occupational skill standards and credentialing systems. In cooperation with organizations such as the Illinois Chamber of Commerce, the Illinois AFL-CIO, the Illinois Manufacturers' Association and others, the Council established the first five subcouncils in 1995—Agriculture and Natural Resources, Manufacturing, Health and Social Services, Hospitality and Business and Administrative/Information Services.

The remaining subcouncils include Applied Science and Engineering Services; Legal and Protective Services; Transportation, Distribution and Logistics; Educational Services; Financial Services; Marketing and Retail Trade; Communications; Construction; and Energy and Utilities.

The Standards Development Committees, composed of business, labor and education representatives, are experts in the related occupational cluster and work with the product developer to

- develop or validate occupational skill standards,
- identify related academic skills,
- develop or review assessment or credentialing approaches, and
- recommend endorsement of the standards and credentialing system to the industry subcouncil.

Expected Benefits for Employers, Educators, Students and Workers

Occupational skill standards and credentialing systems are being developed and promoted by the IOSSCC to improve Illinois' competitiveness. Such standards and credentialing systems provide a common language for employers, workers, students and education and training providers to communicate skill requirements and quality expectations for all major industry and occupational areas.

For Employers, skill standards will

- Improve employee recruitment and retention by more clearly identifying skill requirements,
- Encourage improved responsiveness and performance of education and training providers,
- Enlarge the pool of skilled workers,
- Focus attention on the importance of training investment.

For Education and Training Providers, skill standards will

- Provide information to all major industries and occupations,
- Contribute to program and curriculum development,
- Strengthen relationships between education and training providers,
- Improve career planning.

For Students and Workers, skill standards will

- Foster better decision making concerning careers and the training necessary to acquire well-paying jobs,
- Allow more effective communication with employers about what they know and can do,
- Allow more effective work with employers in career development and skill upgrading.

IOSSCC Requirements for Occupational Skill Standards

Any occupational skill standards and credentialing system seeking IOSSCC endorsement must

- represent an occupation or occupational cluster which meets the criteria for IOSSCC endorsement;
- address both content and performance standards for critical work functions and activities for an occupation or occupational area;
- ensure formal validation and endorsement by a representative group of employers and workers within an industry;
- provide for review, modification and revalidation by an industry group a minimum of once every five years;
- award credentials based on assessment approaches that are supported and endorsed by the industry and consistent with nationally recognized guidelines for validity and reliability;
- provide widespread access and information to the general public in Illinois;
- include marketing and promotion by the industry in cooperation with the partner state agencies.

Definitions and Endorsement Criteria

The definitions and endorsement criteria are designed to promote the integration of existing and future industry-recognized standards, as well as the integration of the Illinois academic and occupational skill standards. Because all skill standards must address the critical work functions and activities for an occupation or industry/occupational area, the Council further defined three major components:

- ***Conditions of Performance:*** The information, tools, equipment and other resources provided to a person for a work performance.
- ***Work to Be Performed:*** A description of the work to be performed by a person.
- ***Performance Criteria:*** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedural requirements (e.g., safety, standard professional procedures) and time and resource requirements. The IOSSCC also requires performance criteria to be further specified by detailed individual performance elements and assessment criteria.

The IOSSCC is currently working with the Illinois State Board of Education and other state agencies to integrate the occupational standards with the Illinois learning standards which describe what students should know and be able to do as a result of their education. The Council is also working to integrate workplace skills—problem solving, critical thinking, teamwork, etc.—with both the learning and occupational skill standards.

The Illinois Model

Illinois Occupational Skill Standards describe what people should know and be able to do and how well these skills and knowledge will be demonstrated in an occupational setting. They focus on the most critical work performances for an occupation or occupational area. As seen in the following model, Illinois Occupational Skill Standards contain at least these three areas:

- Performance Skill
- Skill Standard
- Performance Elements and Assessment Criteria

The following sections may also be included at the discretion of the specific standards development committee:

- Performance Area
- Assessment and Credentialing Approach

Illinois Occupational Skill Standards carry a coding at the top of each page identifying the state, fiscal year in which standards were endorsed, subcouncil abbreviation, cluster abbreviation and standard number. For example, the tenth skill standard in the Greenhouse/Nursery Cluster, which has been developed by the Agriculture and Natural Resources Subcouncil, would carry the following coding: IL.97.ANR.GNC.10.

A model for Illinois Occupational Skill Standards showing the placement of the coding and providing a description of each area within a standard is contained on the following page.

SUMMARY OF WORK TO BE PERFORMED. SUMMARY IS BRIEF AND BEGINS WITH AN ACTION VERB.

IL. FY. SUBCOUNCIL. CLUSTER. STANDARD NO.

PERFORMANCE AREA

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Includes all information, tools, equipment and other resources provided to the learner for performing the work.

WORK TO BE PERFORMED

Provides an overview of the performance with the major elements or steps being described under Performance Elements and Assessment Criteria.

PERFORMANCE CRITERIA

Includes product characteristics (e.g., accuracy levels, appearance) and/or process or procedure requirements (e.g., safety requirements). Time limits are specified whenever possible.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

Statement of the major elements, components or steps of the overall performance and the assessment criteria for determining successful performance. Includes all major tasks, the knowledge to be demonstrated and specific assessment criteria.

ASSESSMENT AND CREDENTIALING APPROACH

Optional statement of suggested assessment approaches for the performance which also refers to existing assessment and credentialing systems.

DEVELOPMENTAL PROCESS

After studying current labor market information and noting the availability of an industry that currently has a certification program in place, the Agriculture and Natural Resources Subcouncil recommended the greenhouse and nursery industry to be the fourth occupational area for which occupational skill standards would be developed. This cluster meets the criteria established by the Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) for occupational skill standards development: education and training requirements, employment opportunities, earnings potential and/or career opportunities. The careers identified in the greenhouse/nursery cluster include stocker, loader, propagator, grower, salesperson, plant and hardgoods delivery person, pruner, department supervisor, crew supervisor, greenhouse or nursery manager and greenhouse or nursery owner.

A product developer knowledgeable about the greenhouse and nursery cluster occupations began the process of performance skill identification. Given the range within the occupations and scope of a business, the initial charge for the product developer was to prepare an organizational framework that would address the major skill performances in the workplace. This framework set the parameters for addressing the skill performances desired by the greenhouse and nursery industry.

Resources included job descriptions from *The Dictionary of Occupational Titles* and greenhouse/nursery industry; competencies addressed in postsecondary educational programs; VETECS materials; and Illinois task lists developed to form the basis of instructional content for secondary, postsecondary and adult occupational training programs. Certification tests, training manuals and teaching outlines provided by the Illinois Nurserymen's Association (INA) reinforced the direction given in the framework. The National Vocational Qualification Performance Skill Standards and Examinations for Horticulture from the United Kingdom were also used in determining framework and direction.

A standards development committee composed of workers at all levels within the greenhouse/nursery cluster was convened. The framework and initial outline of performance skill standards were developed, reviewed, revised and validated. During two, all-day meetings, the framework was accepted and the outline of the occupational skill standards finalized. Work was also completed on assessment criteria and credentialing in accordance with the direction established by the IOSSCC. The product developer submitted the draft performance skill standards to the standards development committee for review and revision. The standards development committee then met to review and approve the occupational skill standards.

Performance elements and assessment criteria were developed using industry standards. The skill standards outline the specific criteria expected for evaluation in the workplace. Criteria are behavioral statements of occupational skill standards. As such, they serve as an evaluation tool and workplace guide.

A set of occupational skill standards was provided to the Agriculture and Natural Resources Subcouncil. Comments submitted by members of the Subcouncil and those requested from other reviewers have been integrated into the final product. After approval copies were distributed for further review by the greenhouse/nursery community, the Illinois Nurserymen's Association and the Professional Plant Growers Association (PPGA) sent letters of commitment to distribute, publicize and periodically review and update the standards. The Illinois Nurserymen's Association will be the credentialing group.

ASSUMPTIONS FOR GREENHOUSE/NURSERY CLUSTER STANDARDS

Skill standards statements assume:

1. Workplace skills (employability skills) are expected of all employees, including those in the greenhouse/nursery industry. Those are not included with this set of skill standards.
2. All skills are to be accomplished by a 'work environment' check that leaves the site neat, clean and a safe place in which to live and work. This would comply with Occupational Safety and Health Admininstration (OSHA) and Environmental Protection Agency (EPA) requirements and directives.
3. The rights of individuals will be known to the employees as part of their educational process and will be respected and expected as part of employment.
4. Employees will know and adhere to specific company policies and procedures of the work site. Policies and procedures may vary from company to company.
5. Certification conditions will be conducive to meeting the standard of performance. Standard equipment in the greenhouse/nursery industry will be used. The equipment will be identified prior to the certification testing.
6. The range of plant and hardscape materials, soils and fertilizers will be defined in the certification system. The range of plant materials will include annuals, bulbs, perennials, vines, ground covers, trees, shrubs, evergreens, native forbes, grasses and water plants. Time elements will be outlined for the occupational skill standards at the certification testing and will result from the experience and consideration of a panel who are members of the Illinois Nurserymen's Association.
7. Socialization skills needed for work are viewed in relation to the lifelong career experience and are not solely part of the initial educational experience.
8. The occupational skill standards are intended to reflect competencies at entry to the identified occupation.
9. Skills will progress from simple to the complex. Once a skill level has been successfully performed, it will be incorporated into more complex skills.

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PERFORMANCE SKILL LEVELS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Greenhouse/Nursery Mgr.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Production Manager	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Propagator	●	●	●	●	●	●	●	●	●	●		●	●	●	●					●	●	●	●
Planter/Transplanter/Worker	●	●	●	●	●	●	●	●	●	●	●		●		●	●					●	●	●
Salesperson	●	●			●		●	●					●				●	●	●		●	●	●
Grower	●	●	●	●	●	●	●	●	●	●			●	●	●					●	●	●	●
Delivery Person	●	●	●		●	●	●	●					●			●	●	●	●		●	●	●
Media Mixer		●	●		●		●						●								●	●	●
Stocker/Loader	●	●			●		●	●					●		●	●					●	●	●
Grader	●	●																					
Picker/Harvester		●																					

1. Assist in Erecting Greenhouses, Polyhouses, Cold Frames and Other Similar Facilities
2. Carry Out Relevant Procedures in Case of an Emergency
3. Select, Operate and Maintain Tools and Equipment
4. Control Pests and Plant Disorders
5. Maintain a Clean and Safe Facility Work Environment
6. Prune Trees, Shrubs and Herbaceous Plants
7. Conserve and Dispose of Waste and Recyclables
8. Receive, Unpack and Place Incoming Plants and Materials
9. Propagate and Grow Plants
10. Plant and Care for Potted Plants in the Greenhouse and Nursery
11. Design, Monitor and Assemble Planter Combinations
12. Plan and Manage Work Schedules in the Greenhouse/Nursery
13. Establish and Maintain Relationships with Co-Workers
14. Analyze, Interpret and Enhance Substrate Fertility and Water Quality
15. Select, Grade, Harvest and Prepare Plants for Delivery
16. Transport and Deliver Plants and Merchandise
17. Close the Sale
18. Operate and Maintain Payment Point
19. Process Payments for Sale of Services and Merchandise
20. Monitor, Manage and Analyze the Financial Performance of the Greenhouse/Nursery
21. Prepare and Submit Accident and Insurance Reports and Claims
22. Carry Out Security Procedures
23. Follow Suspected Theft Procedures

● *Bullets shown on the matrix identify the skill standards (by number) which are needed for each listed occupation.*

ASSIST IN ERECTING GREENHOUSES, POLYHOUSES, COLD FRAMES AND OTHER SIMILAR FACILITIES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following equipment and materials:

- Plans/blueprints
- Greenhouse
- Polyhouse
- Cold frame
- Propagation bed
- Lath house
- Benches
- Base structure/material
- Concrete
- Lights
- Lumber
- Irrigation equipment
- Ventilation devices
- Potting equipment
- Loading dock
- Ball yard
- Bareroot storage
- Refrigerator equipment
- Tools and equipment
- Other possible structures and equipment

WORK TO BE PERFORMED

Install facilities.

PERFORMANCE CRITERIA

The construction plans are followed and any problems are diagnosed and corrected. The base materials, irrigation materials, lighting, heating and other facilities are installed following the company guidelines. The area is cleaned after the work is completed.

One hundred sixty to 300 hours will be given with 2 to 3 employees and a supervisor to erect a 100 X 60 foot lexan greenhouse.

Forty to 60 hours will be given with two employees and a supervisor to erect a polyhouse 30 X 100 feet.

Twenty to 30 hours will be given to erect a cold frame 4 X 100 feet.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Plans are read, construction/installation problems are properly identified and all revisions and changes are completed.
2. Materials are correctly identified and transported to the work site.
3. All materials including base, irrigation equipment, heating equipment, cooling equipment, lighting and other components are properly installed including solid-state controllers. Installation is within company time guidelines.
4. The work site is cleaned properly after completion of the work.

CARRY OUT RELEVANT PROCEDURES IN CASE OF AN EMERGENCY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following equipment and materials:

Accident and emergency report forms
First-aid kits
Fire extinguishers
Occupational Safety and Health Administration (OSHA) regulations

WORK TO BE PERFORMED

Follow emergency procedures in cases of accidents, fire, tornadoes and related situations involving evacuation. Use emergency equipment and materials as needed. Complete and submit all accident and emergency reports and make recommendations on preventing future accidents and improving responses to accidents and other emergencies.

PERFORMANCE CRITERIA

Emergency and evacuation situations are correctly evaluated, the proper procedures are correctly executed, all equipment and materials are properly and effectively used and all forms are properly completed and submitted.

Five to ten minutes will be given to outline the appropriate steps to be taken in the case of an identified emergency.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Emergency and evacuation situations are correctly evaluated.
2. Proper notification is given to all affected people.
3. Appropriate procedures are correctly executed including evacuation procedures and assembly points.
4. Appropriate first aid is administered or obtained.
5. Immediate reporting of emergencies is complete.
6. Emergency/accident reports are completed and submitted.
7. Appropriate recommendations/actions are taken to prevent future accidents/ emergencies or to improve responses.

SELECT, OPERATE AND MAINTAIN TOOLS AND EQUIPMENT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company procedures and the following equipment and materials:

(This is a partial listing.)
Sprayers
Fertilizer applicators
Tractors (with front-end loaders and/or scrapers)
Rototillers
Chain saws
Tree spades
Edgers
Pruners
Loppers
Trimmers
Aerators
Tractors
Riding and walking lawn mowers (21 and 36 inch)
Electrical tools
Two-cycle engine equipment
Soil mixers and sterilizers
Fertilizers
Injectors
Chemicals
Hardgoods
Fork lift
Bob cat
Hydromat (hydraulic pallet jack)
Pallet jack

WORK TO BE PERFORMED

Identify, calibrate, operate and maintain tools and equipment.

PERFORMANCE CRITERIA

Equipment is properly identified and is properly and safely calibrated, operated and maintained according to equipment manuals and company procedures. All equipment is properly cleaned and stored after use. All operating and maintenance forms and records are correctly completed. All lost tools are reported immediately.

Five to ten hours per week will be given to inspect and operate boilers, electric fans, gas heaters, injectors, cooling equipment, rolling benches, carbon dioxide injectors, transplanting machines, watering systems and acid injectors for a greenhouse that is 60 feet wide and 100 feet long.

One to two hours will be given to complete operation of a carbon dioxide injector unit.

Two to four hours will be given to complete the operation of a computer system capable of operating a greenhouse space of 6,000 square feet.

One to three hours will be given to complete the inspection and operation of a horizontal air flow system.

Fifteen to 30 minutes will be given to complete the operation of moving portable benches in a rolling bench greenhouse.

One to two hours will be given to set up an automatic transplanting assembly line.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Equipment is properly and safely operated according to equipment manuals and company procedures.
2. Equipment is properly inspected, calibrated and maintained according to equipment manuals and company procedures.
3. Hazardous and dangerous materials are identified (Material Safety Data Sheets - MSDS), handled and stored.
4. Work sites are properly cleaned after use of equipment.
5. Equipment is properly cleaned and stored.
6. Maintenance records are maintained and securely filed.
7. Shrinkage of tools and equipment is accounted for.

CONTROL PESTS AND PLANT DISORDERS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given instruction on company procedures and the following:

Pesticide license (must be 18 years of age)
Performance schedules
Sprayers
Tractors
Pesticide equipment
Weeds
Pests
Diseases
Insects
Deer, beaver and/or raccoons
Plants
Moss, algae and other pests
Material Safety Data Sheets (MSDS)

WORK TO BE PERFORMED

Identify the cultural problem, recommend a control program and implement an approved program.

PERFORMANCE CRITERIA

An integrated pest management program is implemented, cultural problems are properly diagnosed, the proper control program is recommended and proper action is taken. Sprayers, tractors and other pesticide equipment are properly operated, calibrated and maintained to eliminate diseases, insects, moss, weeds, algae and other pests.

One to two hours will be given to scout a 6,000 square foot greenhouse and determine what pests and physiological disorders exist.

Fifteen to 30 minutes will be given to select an appropriate control measure.

Ten to 15 minutes will be given to calculate the recommended amount of chemical(s) to be applied.

One to two hours will be given to apply the correct control measure to pest(s) identified and correct the situation causing the physiological problem(s).

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Cultural problems, diseases, insects, moss and weeds are properly identified and diagnosed.
2. The proper control program is recommended considering economic thresholds.

3. Weeds, pests, diseases, insects, moss and plant disorders are properly controlled through pesticide application and alternative cultural controls.
4. Hazardous or dangerous substances are properly handled and disposed of, and proper records are maintained.
5. Sprayers, tractors and other pesticide equipment are properly operated, calibrated, maintained and stored.
6. Proper records are kept for the Occupational Safety and Health Administration (OSHA).
7. Worker Protection Standards (WPS) are enforced.

MAINTAIN A CLEAN AND SAFE FACILITY WORK ENVIRONMENT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company housekeeping procedures and schedules and the following equipment and materials:

Work Protection Standards (WPS)
Cleaning equipment and materials
Protective clothing
Disposal equipment/containers

WORK TO BE PERFORMED

Carry out housekeeping (maintenance and cleaning) activities according to company procedures and schedules and Occupational Safety and Health Administration (OSHA) regulations.

PERFORMANCE CRITERIA

Housekeeping activities are carried out according to company procedures and schedules through the proper and safe use of all maintenance and cleaning equipment and materials and protective clothing.

One to two hours will be given to make the work environment clean and safe.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Maintenance and cleaning activities are carried out according to company procedures and schedules and OSHA regulations.
2. Maintenance and cleaning/disposal equipment and protective clothing are used properly and safely.
3. Hazardous and dangerous materials are properly handled and disposed in proper containers and areas.
4. Work areas are clean and functional according to company standards.

PRUNE TREES, SHRUBS AND HERBACEOUS PLANTS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given instruction on company procedures and the following equipment and materials:

Shears
Loppers
Hedge trimmers
Saws
Knives
Vehicle
Mowers

WORK TO BE PERFORMED

Prune trees, shrubs, hedges, herbaceous plants, espalier, topiary and standards from the ground. Collect, stack, remove, compost, chip, sort and load debris to be removed from the landscape.

PERFORMANCE CRITERIA

Trees, shrubs, hedges, herbaceous plants, espalier, topiary and standards are properly pruned. Plant materials are removed, and the area is swept clean.

Thirty minutes to two hours will be given to complete the pruning of a three-inch-diameter shade tree.

Thirty minutes to one hour will be given to complete the pruning of a ten-foot-tall shrub.

Thirty minutes to one hour will be given to complete the pruning of a ten-foot section of a three-foot-tall hedge.

Fifteen to 45 minutes will be given to complete the dead heading and cleaning of 50 square feet of herbaceous garden.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Trees, shrubs, hedges, herbaceous plants, espalier, topiary and standards are properly and safely pruned from the ground.
2. Unwanted plant materials are completely removed and loaded into vehicles.
3. Containerized plants are returned to an appropriate location.
4. Work areas are cleaned and swept.
5. All tools and equipment are properly cleaned and stored.

CONSERVE AND DISPOSE OF WASTE AND RECYCLABLES.

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SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following equipment and materials:

Materials used in the industry
Waste
Recyclables
Waste processing equipment for chemical spills, organic waste, pesticide and aerosol cans

WORK TO BE PERFORMED

Conserve materials and dispose of waste and recyclables in accordance with Occupational Safety and Health Administration (OSHA) regulations.

PERFORMANCE CRITERIA

Waste is determined to be a minimum by company policy. Waste and recyclables are handled, removed and stored correctly through the proper use of equipment and containers.

Fifteen to 30 minutes will be given to collecting, moving and composting a 30-gallon container of organic waste.

Thirty minutes to one hour will be given to collecting and composting a wagonload of organic waste.

Ten to 30 minutes will be given to collecting and disposing of pesticide containers.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Waste and recyclables are handled correctly according to their characteristics.
2. Waste and recyclables are promptly removed and stored in the correct location as they are generated.
3. Equipment used for processing and containing waste and recyclables is operated safely and is cleaned and returned to its correct location.

RECEIVE, UNPACK AND PLACE INCOMING PLANTS AND MATERIALS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following equipment and materials:

Hardgoods
Plant materials
Shipping/freight forms
Company inventory and storage forms and procedures
Quality control procedures

WORK TO BE PERFORMED

Receive, unload, unpack, record and properly store incoming inventory according to company procedures.

PERFORMANCE CRITERIA

Incoming merchandise is properly received, unloaded and stored without damage. All shipping and inventory forms are correctly completed and filed.

Two to four hours will be given to ten people who will unload and place a semi-truck load of nursery stock.

Thirty minutes to two hours will be given to taking the inventory of a semi-truck load of nursery stock.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. All incoming materials are received, safely unloaded, unpacked and checked for quality, type and quantity according to company procedure.
2. All incoming materials are correctly identified, counted and correctly matched to purchase order and shipping forms.
3. Packing materials are removed and disposed of promptly and correctly.
4. Product quality is preserved and protected by using correct handling techniques.
5. Discrepancies and damaged and poor quality merchandise are set aside for further processing.
6. Merchandise is placed in the correct location and storage facility and in the amount of space required.
7. The receiving process is carried out safely, securely and hygienically with a minimum of disruption.
8. The proper tools, equipment and clothing are used safely to unload and unpack merchandise and are returned to the correct location after use.
9. Freight/shipping/receiving and inventory forms are completed with no errors and are properly filed.
10. All activities are done according to company policy and procedure.
11. All damaged materials and miscounts are properly reported.

PROPAGATE AND GROW PLANTS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures, management plans and the following tools, equipment and materials:

- Reference materials
- Seed (annual, perennial and woody)
- Bulbs, tubers, rhizomes, corms and stolons
- Herbaceous cuttings
- Woody cuttings
- Evergreen cuttings
- Tissue cultures
- Knives and shears
- Spores
- Substrate (media and artifiial soil media)
- Air layers
- Irrigation equipment
- Containers
- Mulch
- Growing facilities, benches and beds
- Containerization and potting equipment

WORK TO BE PERFORMED

Sow seeds and spores, take cuttings, stick cuttings, take divisions and plant, transplant and maintain these plants in an appropriate growing facility.

PERFORMANCE CRITERIA

Propagation of plants will be accomplished, and appropriate tools and equipment will be selected and operated. Plants will be staked, pruned, planted, cleaned, edged, mulched, watered and fertilized; and all cultural problems will be diagnosed and appropriate corrections made.

Thirty minutes to one hour will be given to the harvesting, cleaning and sticking of 72 herbaceous cuttings taken from greenhouse-grown geraniums.

One to two hours will be given to the sticking of 500 deciduous shrub cuttings in a ground sand bed.

One to two hours will be given to the grafting of 50 ash trees in a tree line of a nursery.

Fourteen weeks (40 hours per week from August 15 through December 15) will be given to the production of a poinsettia crop in 30,000 square feet of greenhouse.

Five to 15 minutes will be given to the manual sowing of a flat of lettuce seed from a seed package.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. The propagation and growing area is cleaned of all litter, weeds and leaves.
2. Cultural problems are identified and corrected.
3. Substrate is measured correctly and the proper fertilizer is applied.

4. Plant materials are properly staked, pruned, planted, cleaned, edged, mulched, watered and fertilized according to the company plan and company time guidelines.
5. Equipment and tools are properly selected, used, operated and maintained according to equipment manuals and company procedures.
6. The nursery/greenhouse crew is organized, supervised and used to ensure efficiency of time and materials.

PLANT AND CARE FOR POTTED PLANTS IN THE GREENHOUSE AND NURSERY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company procedures and the following equipment and materials:

Plugs
Liners
Bare root stock
Tissue culture
Field-grown plants
Reference materials on plants and care
Containers

WORK TO BE PERFORMED

Plant and maintain potted plants and nursery plants by monitoring plants and environmental conditions and addressing poor plant condition due to insects, disease, poor culture and improper cultural procedures.

PERFORMANCE CRITERIA

Merchandise planted materials, monitor and maintain plants and identify signs of poor condition. Correctly identify problems and take appropriate action according to reference materials and company procedures.

One hour to 90 minutes will be given to transplant by hand from a 512 plug flat to six 1308 flats.

One to two hours will be given to transplant by machine from a 588 plug tray to a 36 tray for a total of 3,500 trays.

Forty-five minutes to one hour will be given to transplant 60 four-inch pots into 60 one-gallon pots.

One to two hours will be given to hand-ball ten 12-inch tall plants grown in sand.

One to two hours will be given to machine dig forty-five 42-inch tall plants grown in clay and place into 2-gallon containers.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Relevant information and product care requirements are obtained from relevant reference materials.
2. The merchandise is properly planted and wrapped and is placed in a suitable environment (i.e., temperature, light, space, water) according to the plant's requirements.
3. The merchandise is monitored and the need for maintenance and signs of poor condition are correctly identified.
4. Relevant persons are informed of signs of poor condition and the correct actions are taken.

DESIGN, MONITOR AND ASSEMBLE PLANTER COMBINATIONS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following materials and designs to complete:

- Plants
- Soils and media
- Work bench
- Tools
- Decorative wraps
- Containers

WORK TO BE PERFORMED

Assemble materials and plant arrangements in accordance with design principles and practice. Prepare planter combination for delivery.

PERFORMANCE CRITERIA

Planter combinations are planned and assembled in accordance with design principles and practices with minimum wastage and the protection of the quality and salability of materials. Combinations are monitored and maintained in good condition.

Twenty to 30 minutes will be given to design a planter combination for a 12-inch hanging basket.

One to 2 hours will be given for the construction of 20 combination hanging baskets.

Fifteen to 25 minutes will be given to monitor and water 500 ten-inch hanging baskets on a drip-tube watering system.

One to 2 hours will be given to monitor and water 500 ten-inch hanging baskets using hand watering.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Proper design is developed considering lasting qualities, availability of materials, maintenance and situation requirements.
2. Materials are prepared and assembled according to design requirements and with minimum wastage.
3. Quality of materials is preserved, monitored and protected during the process.
4. Appropriate tools and equipment are selected and used properly to safely assemble the floral arrangements according to safe work practices. Chemicals are used according to Occupational Safety and Health Administration (OSHA) regulations.

5. Decorative wraps are correctly applied to the container as the finished product.
6. The planter combination is consistent with design requirements and with the principles of design such as proportions, balance, color combinations, harmonies, rhythm, line, form and texture.
7. The planter combination is constructed for easy and safe transportation without risk of collapsing.
8. The work area is clear, clean and free of hazardous materials; and unused materials and cleaning equipment are returned to their designated locations.

PLAN AND MANAGE WORK SCHEDULES IN THE GREENHOUSE/NURSERY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following equipment and materials:

Work to be performed
Job work orders and reporting information
Time sheets and job records forms
Crew work schedules
Chemical spray schedules and reentry times
Departments needing coordination

WORK TO BE PERFORMED

Plan, adjust and maintain daily work schedules and maintain and file information on project costs and completion times.

PERFORMANCE CRITERIA

Work plans and schedules result in the efficient utilization of crew and equipment, and all records are complete and accurate.

Fifteen to 30 minutes will be given to determine the work schedule (including weekends) for five people.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Work schedules are accurate and provide the most efficient utilization of crew and equipment.
2. Work schedules are maintained according to plan.
3. Work records are complete and accurate.

ESTABLISH AND MAINTAIN RELATIONSHIPS WITH CO-WORKERS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given:

Company policies

WORK TO BE PERFORMED

Establish and maintain constructive relationships with colleagues.

PERFORMANCE CRITERIA

Honest and friendly behavior will be observed. Opinions and information are exchanged and shared. Advice and help are offered appropriately. Differences of opinion are dealt with in ways to avoid offense and conflict. Promises and undertakings are honored with other priorities and commitments.

Twenty to 30 minutes will be given to establish a relationship with a co-worker.

Five to ten minutes will be given to maintain a relationship with a co-worker.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Honest and open, friendly behavior is encouraged.
2. Opinions and information are shared.
3. Advice and help are offered with sensitivity.
4. Differences of opinion are dealt with to avoid conflict and offense yet maintain respect.

ANALYZE, INTERPRET AND ENHANCE SUBSTRATE FERTILITY AND WATER QUALITY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following equipment and materials:

Water quality test results
Substrate application area
Substrate sampling procedures and techniques
Fertilization application procedures and timings
Fertilizer application equipment
Reference materials in test interpretation and recommendations

WORK TO BE PERFORMED

Conduct and interpret a substrate test, make recommendations and apply fertilizers in the correct amounts to a designated plant area.

PERFORMANCE CRITERIA

The substrate is accurately sampled and analyzed, and the correct fertilizer is applied in the appropriate amounts.

Five to ten minutes will be given to take a substrate sample.

Twenty to 30 minutes will be given to complete a substrate test.

Fifteen to 30 minutes will be given to interpret a substrate test.

Thirty minutes to one hour will be given to take notes and change as necessary the fertilization process to enhance plant growth.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. The substrate sample is taken according to stated procedures.
2. The substrate test is correctly conducted according to stated procedures.
3. The correct recommendations are made based on the test results.
4. The proper fertilizer is applied to the application area in the correct amounts.
5. The fertilizer application is calibrated correctly to application equipment.
6. The fertilizer is applied through the proper and safe use of application equipment.
7. The runoff is collected and recycled according to Occupational Safety and Health Administration (OSHA) guidelines.

SELECT, GRADE, HARVEST AND PREPARE PLANTS FOR DELIVERY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following equipment and materials:

Harvested and graded plants
Bed lifter
Bare root digger
Tree spade
Wrapping
Water
Workbench
Delivery destinations
American Nurseryman's Standards

WORK TO BE PERFORMED

Select, grade, harvest and prepare plants for delivery.

PERFORMANCE CRITERIA

Plants are properly selected, harvested, graded and prepared for delivery according to customer and company requirements and specifications.

One to five minutes will be given to selecting, grading and tagging ten geraniums for delivery.

Fifteen minutes to one hour will be given to selecting, grading and tagging ten premium-grade ash trees in a nursery row.

One to two hours will be given to machine spading one, two-inch-diameter tree and delivering it within a ten-mile radius.

Thirty minutes to one hour will be given to grading, packaging and marking for delivery 500 rooted cuttings of a herbaceous plant.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA.

1. Information is recorded accurately on company and customer requirements and specification for preparation of delivery.
2. Product wrappings are selected to conform to specifications and requirements.
3. Appropriate tools and equipment are selected and used safely.
4. Problems in carrying out instructions are identified and reported, and clarification is obtained.
5. The product is prepared according to specifications and within minimum wastage.

6. The product conforms to specified requirements.
7. The product can be transported easily, safely and without collapsing.
8. The work area is clean and free of hazardous materials, and unused materials and cleaning equipment are returned to their designated locations.
9. The American Nurseryman Standards are followed.
10. The proper loading and stacking of plant materials will be observed.

TRANSPORT AND DELIVER PLANTS AND MERCHANDISE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following equipment and materials:

- Driver's license
- Plants, planters and hardgoods
- Water
- Workbench
- Vehicle registration
- Insurance identification
- Company vehicle
- Maps and directions
- Delivery schedule

WORK TO BE PERFORMED

Transport and deliver plants, planters and hardgoods.

PERFORMANCE CRITERIA

Plants, hardgoods and planters are delivered according to the delivery schedule with no damage, and the delivery is properly executed with verification of customer receipt.

Two to three hours will be given for loading one flat-bed semi-truck using a fork lift with a combination of trees and shrubs that are balled and burlapped and will need tarping and watering before delivery.

Forty-five minutes to one hour will be given for loading one flat-bed truck with sod.

Five to 30 minutes will be given for the development of a delivery route.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Deliveries are accurately recorded, secured and organized to meet customer and company requirements.
2. Problems in meeting customer and business requirements and delivery instructions are identified and reported, and clarification is obtained.
3. Hardgoods and plants are properly and safely loaded and unloaded in the delivery vehicle without damage to hardgoods and plants.
4. Products are maintained in a salable condition.
5. Quality checking procedures are utilized prior to dispatch and upon delivery to the customer to ensure that hardgoods and plants meet customer specifications.
6. Delivery is completed efficiently without customer complaint.
7. The delivery vehicle is properly maintained according to company policies and procedures; and proper licenses, registrations and insurance are maintained and verified to operate the delivery vehicle.
8. A signed document of delivery is obtained without customer complaint.

9. The appropriate company policy pertaining to payment has been addressed.
10. The appropriate company vehicle is selected for the type of load being transported.
11. Appropriate unloading procedure has been addressed before the materials leave for their destination.

CLOSE THE SALE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following materials:

- Merchandise and services available and price listings
- Order/transaction documents and forms
- Delivery schedule
- After-care and warranty information
- Reference materials on products, merchandise and plants

WORK TO BE PERFORMED

Close the sale, process orders/documents and provide appropriate after-sale services.

PERFORMANCE CRITERIA

The sale is confirmed and completed with the customer. Ordering/transaction documents and forms are accurately completed. After-sale services are explained and provided as needed. Physiological verbal statements are used in closing the sale.

One to three minutes will be given to close a telephone sale when the amount is under $100.

Three to five minutes will be given to close a telephone sale when the amount is between $100 and $500.

Six to ten minutes will be given to close a telephone sale when the amount is between $500 and $1,000.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. The sale is verbally reviewed and confirmed with the customer.
2. Transaction documents are completed accurately, clearly and legibly, and appropriate authorization is obtained.
3. Orders are accurately, clearly and legibly recorded on appropriate documents/equipment.
4. Orders are accurately relayed/processed.
5. Appropriate assistance is offered in transporting purchases.
6. Delivery requirements are confirmed and scheduled where appropriate.
7. After-care services and care instructions are reviewed and verified.
8. Physiological verbal statements are used in closing the sale.

OPERATE AND MAINTAIN PAYMENT POINT.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following equipment and materials:

Payment point register
Payment point materials and supplies
Money in assorted types and quantities

WORK TO BE PERFORMED

Open, close and maintain the payment point register.

PERFORMANCE CRITERIA

The payment point is opened, closed and maintained according to company procedures. Customers are informed of any delays in the payment point operation.

Three to five minutes will be given to operate and maintain the payment point as part of the sale.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Equipment, materials and supplies are maintained at the payment point according to company procedures.
2. Payment point is opened, closed and maintained according to company procedures.
3. The correct money is placed in the payment point register prior to business hours and is maintained in the required quantities during business hours.
4. Payment point contents are made available for authorized collection according to company procedure.
5. The customer is informed politely and promptly of any delay in the payment point operation.

PROCESS PAYMENTS FOR SALE OF SERVICES AND MERCHANDISE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given company policies and procedures and the following equipment and materials:

Money
Checks
Credit cards
Discount coupons/other cash equivalents
Stock/price lists
Delivery forms and payment arrangements

WORK TO BE PERFORMED

Process payments for services and merchandise.

PERFORMANCE CRITERIA

The payment process is conducted properly and accurately. The customer is properly and courteously greeted, informed and thanked according to company procedures.

Three to five minutes will be given to process payments for the sale of services and merchandise.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Merchandise and customer information is recorded correctly.
2. The price/total is stated verbally to the customer.
3. The receipt of money/cash equivalents is verbally acknowledged.
4. Discount coupons/credit are reviewed and accepted correctly.
5. Checks and credit card documents are validated and processed correctly.
6. Money/cash equivalents are placed in a secure, approved location according to company procedures.
7. The correct change is given to the customer.
8. The customer is greeted and thanked in a courteous manner during the payment process and is informed of any delays according to company procedures.
9. Processing errors are handled according to company procedures.
10. Security procedures are followed for handling of cash and merchandise.

MONITOR, MANAGE AND ANALYZE THE FINANCIAL PERFORMANCE OF THE GREENHOUSE/NURSERY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following company information and materials:

Company policies and procedures for project proposals
Company information on materials, labor and equipment costs/prices
Company procedures and forms for recording material, labor and equipment utilization
Greenhouse or nursery budget
Company revenue and cost data on landscape project
Market information

WORK TO BE PERFORMED

Monitor, manage and analyze material, labor and equipment utilization to ensure efficient use of resources and the profitability of a landscape project. Recommend strategies to improve resource utilization and profitability.

PERFORMANCE CRITERIA

The greenhouse or nursery costs are properly monitored and recorded, and the project is completed on schedule and within budget. Resource utilization problems are identified and analyzed, and appropriate strategies are recommended to improve resource utilization and increase profitability.

Thirty to 45 minutes will be given to analyze and manage the financial performance of the fall mum crop.

Thirty to 45 minutes will be given to analyze the costs of the perennial crop and make change recommendations.

Thirty to 45 minutes will be given to managing the labor or growing the annual flower crop.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Greenhouse or nursery project resource utilization is monitored and properly recorded according to company policies and procedures.
2. Greenhouse or nursery activities are completed on schedule and within budget.
3. Greenhouse and nursery costs (e.g. materials, labor, equipment) are analyzed, problems are identified and appropriate strategies are proposed for improving resource utilization and profitability.

PREPARE AND SUBMIT ACCIDENT AND INSURANCE REPORTS AND CLAIMS.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following company information and materials:

Company insurance policies and procedures
Insurance report and claim forms

WORK TO BE PERFORMED

Prepare and submit accident reports and claims to insurance company, and file reports and claims according to company policies and procedures.

PERFORMANCE CRITERIA

Accident reports and claims are properly prepared and submitted to the insurance company and filed according to company policies and procedures.

One to two hours will be given to prepare and submit accident and insurance claims on an identified accident.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Accident reports and claims are properly prepared and submitted to the insurance company and filed according to company policies and procedures.
2. Accident reports and claim forms are properly submitted according to company policies and procedures.
3. Accident reports and claim forms are properly filed according to company policies and procedures.

CARRY OUT SECURITY PROCEDURES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given:

Company policies and procedures
Situations involving the handling of merchandise and cash
Situations involving the monitoring of stock and display areas

WORK TO BE PERFORMED

Follow company security procedures.

PERFORMANCE CRITERIA

Merchandise and cash are supervised at all times. Areas of high potential value and loss are identified and preventive actions are taken. All unauthorized persons and suspicious situations are identified, and appropriate actions are taken according to company procedures.

Five to ten minutes will be given to secure merchandise and cash.

One to two minutes will be given to report a loss of merchandise or cash and to make the area secure.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Merchandise and cash are supervised at all times.
2. Areas of high potential value and loss are identified and preventive actions taken.
3. Unauthorized persons are identified and appropriate actions are taken according to company procedures.
4. Suspicious situations are identified and proper staff are notified.

FOLLOW SUSPECTED THEFT PROCEDURES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given:

Company policies and procedures
Suspected theft situation

WORK TO BE PERFORMED

Follow company policies and procedures for observed/suspected thefts.

PERFORMANCE CRITERIA

Evidence of suspected theft is properly identified and reported, and proper actions are taken according to company policies and procedures.

One to two minutes will be given to report a suspected theft.

PERFORMANCE ELEMENTS AND ASSESSMENT CRITERIA

1. Evidence of suspected theft is correctly identified and reported according to company policies/procedures.
2. Suspected theft situations outside own responsibilities are correctly reported to the designated person(s).
3. Proper actions are taken for suspected theft situations within own responsibilities according to company policies and procedures.

Academic Skills	Skills (and related knowledge) contained in the subject areas and disciplines addressed in most national and state educational standards, including English, mathematics, science, etc.
Assessment	A process of measuring performance against a set of standards through examinations, practical tests, performance observations and/or the completion of work portfolios.
Content Standard	A specification of what someone should know or be able to do to successfully perform a work activity or demonstrate a skill.
Critical Work Functions	Distinct and economically meaningful sets of work activities critical to a work process or business unit which are performed to achieve a given work objective with work outputs that have definable performance criteria. A critical work function has three major components: • **Conditions of Performance:** The information, tools, equipment and other resources provided to a person for a work performance. • **Work to Be Performed:** A description of the work to be performed. • **Performance Criteria:** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance), process or procedure requirements (e.g., safety, standard professional procedures) and time and resource requirements. The IOSSCC requires that these performance criteria be further specified by more detailed individual performance elements and assessment criteria.
Credentialing	The provision of a certificate or award to an individual indicating the attainment of a designated set of knowledge and skills and/or the demonstration of a set of critical work functions for an industry/ occupational area.
Illinois Occupational Skill Standards and Credentialing Council (IOSSCC)	Legislated body representing business and industry which establishes skill standards criteria, endorses final products approved by the industry subcouncil and standards development committee and assists in marketing and dissemination of occupational skill standards.
Industry	Type of economic activity, or product or service produced or provided in a physical location (employer establishment). They are usually defined in terms of the Standard Industrial Classification (SIC) system.

Industry Subcouncil	Representatives from business/industry and education responsible for identifying and prioritizing occupations for which occupational performance skill standards are adapted, adopted or developed. They establish standards development committees and submit developed skill standards to the IOSSCC for endorsement. They design marketing plans and promote endorsed skill standards across the industry.
Knowledge	Understanding the facts, principles, processes, methods and techniques related to a particular subject area, occupation or industry.
Occupation	A group or cluster of jobs, sharing a common set of work functions and tasks, work products/services and/or worker characteristics. Occupations are generally defined in terms of a national classification system including the Standard Occupational Classification (SOC), Occupational Employment Statistics (OES) and the Dictionary of Occupational Titles (DOT).
Occupational Cluster	Grouping of occupations from one or more industries that share common skill requirements.
Occupational Skill Standards	Specifications of content and performance standards for critical work functions or activities and the underlying academic, workplace and occupational knowledge and skills needed for an occupation or an industry/occupational area.
Occupational Skills	Technical skills (and related knowledge) required to perform the work functions and activities within an occupation.
Performance Standard	A specification of the criteria used to judge the successful performance of a work activity or the demonstration of a skill.
Product Developer	Individual contracted to work with the standard development committee, state liaison, industry subcouncil and IOSSCC for the adaptation, adoption or development of skill standards content.
Reliability	The degree of precision or error in an assessment system so repeated measurements yield consistent results.
Skill	A combination of perceptual, motor, manual, intellectual and social abilities used to perform a work activity.
Skill Standard	Specifies the knowledge and competencies required to perform successfully in the workplace.

Standards Development Committee	Incumbent workers, supervisors and human resource persons within the industry who perform the skills for which standards are being developed. Secondary and postsecondary educators are also represented on the committee. They identify and verify occupational skill standards and assessment mechanisms and recommend products to the industry subcouncil for approval.
State Liaison	Individual responsible for communicating information among all parties (IOSSCC, subcouncil, standard development committee, product developer, project director, etc.) in skill standard development.
Third-Party Assessment	An assessment system in which an industry-designated organization (other than the training provider) administers and controls the assessment process to ensure objectivity and consistency. The training provider could be directly involved in the assessment process under the direction and control of a third-party organization.
Validity	The degree of correspondence between performance in the assessment system and job performance.
Workplace Skills	The generic skills essential to seeking, obtaining, keeping and advancing in any job. These skills are related to the performance of critical work functions across a wide variety of industries and occupations including problem solving, leadership, teamwork, etc.

Margaret Blackshere **Ronald Morehead,** *Official Designee*	AFL-CIO
Hollis Earnest	Manufacturing/Electronics
David Emerson	Downstate National Bank
Bernard Gregory	Passavant Hospital
Janet Payne	United Samaritans Medical Center
Michael O'Neill	Chicago Building Trades Council
Gerald Schmidt	Illinois Manufacturing Association Caterpillar, Inc.
Jim Schultz	Illinois Retail Merchants Association Walgreen Company
Larry Vaughn	The Illinois State Chamber of Commerce Alternative School Network

Lanny Anderson	Black Hawk College, East Campus
Steve Bailey	Family Tree Garden Center
Rick Butler	Pekin Hardwood Lumber Company, Inc.
David Gillespie	Section Manager, Illinois Department of Conservation Division of Forest Resources
Eldon Haab	Illinois State Florists Association Forget-Me-Not Flowers
Harold Hawkinson	Farm Owner/Operator
Paul Julius	Executive Director Midwest Food Processors Association
John Kraft	Owner Kraft Fertilizer, Inc.
Donald Krug	Chicago High School for Agricultural Sciences
Glen Nichols	President Harvestore Systems
Richard W. Nichols	Soil Conservation Advisor III Bureau of Soil and Water Conservation
Tony Romolo	Illinois Laborers
Hugh David Scates	Partner Pat Scates and Sons
Perry Schneider	Agra-Placements, Ltd.
Sharon Schwarz	Subcouncil Chair Schwarz Nursery
William B. Schreck	State Liaison Illinois State Board of Education
Thomas R. Wiles	State Liaison Illinois State Board of Education

APPENDIX D GREENHOUSE/NURSERY STANDARDS DEVELOPMENT COMMITTEE

Dave Blattner	The Growing Place Nursery
Chuck Davis	Kankakee Nursery
Caryn Jennens	Joliet Junior College Greenhouse
Jim Kerwin	Cola's Greenhouse
Gary Knosher	Midwest Ground Covers
Rich Massat	The Growing Place Nursery
Gary McDonald	Agri-Placements, Ltd.
Sharon Schwarz	Schwarz Nursery
John Slowey	Sunnycrest Greenhouses
Larry Smith	Hinsdale Nurseries
Diane Varsek	Varsek's Greenhouse, Inc.

James Ethridge, Ph.D.	Product Developer Chairman, Agriculture Department Joliet Junior College
William B. Schreck	State Liaison Illinois State Board of Education
Thomas R. Wiles	State Liaison Illinois State Board of Education

I. Occupational Definition and Justification

A. Occupational Definition

GREENHOUSE/NURSERY/SUPERVISOR/TECHNICIAN

SALESPERSON: Sells container-grown plants and field-grown plants. Advises the customer on selection of plants and methods of planting and cultivation. Suggests trees, shrubs, ground covers, annuals, perennials, bulbs, etc., for specified growing conditions. May water and prune growing plants. May load vehicles.

SUPERVISOR: Supervises and coordinates activities of workers engaged in grading plants according to size and appearance, packages customer orders, loads vehicles and supervises the propagation and growing of plant materials. Utilizing computer-generated data, reviews inventory records, customer orders and shipping schedules. Arranges the daily activities of workers, collects daily work tallies and prepares written/computerized reports. Performs employee evaluations and hires, promotes, disciplines and dismisses employees.

GROWER: Propagates and grows horticultural specialty crops such as seeds, bulbs, rootstocks and ornamental plants. Plans the work area and its utilization and work schedules according to knowledge of crop culture, climate, market conditions and environmental control systems. Monitors the timing and metering devices that regulate the frequency and amount of fertilization, humidity, ventilation and carbon dioxide conditions and dispense herbicides, fungicides, insecticides and other pesticides. Explains and demonstrates plant-care techniques to subordinates. May assign their duties. May deal with vendors to purchase supplies, plants and seeds. May maintain production records. May be identified as a crop grower. May prune woody and herbaceous plants.

B. Employment and Earning Opportunities

Employment projections indicate above-average growth in Illinois for both this industry and this occupational cluster. Job opportunities should be plentiful for the occupations in this medium-sized occupational cluster. Average annual wages for greenhouse/nursery managers range from $30,000 to $38,000. Supervisors and technicians earn between $17,000 and $21,000 per year. Other occupations in this cluster generally receive entry-level wages of between $5.75 and $7.00 per hour ($12,000-$14,500 annually). Seasonal employment may be a significant factor for some of the entry-level occupations in this cluster.

C. Career Opportunities and Education and Training Requirements

Two or more years of postsecondary education, specific work experience or apprenticeship needed. May exhibit capabilities to speak in English and Spanish.

II. Occupational Standards and Credentials

A. Occupational Standards (See attached Standards.)

B. Assessment and Credentialing System

The Illinois Nurserymen's Association (INA) is currently reviewing and evaluating its assessment and certification program. Its program has been in existence for five years. The INA has endorsed the standards and will utilize them in further refining and readdressing their assessment and certification efforts. The standards and occupations identified in this document will be addressed in the INA certification program.

III. Industry Support and Commitment

A. Industry Commitment for Development and Updating

1. The development of these performance skill standards is a result of efforts of the Subcouncil and the Standards Development Committee. The development process utilized the following steps:

   a. Identification of performance skills.
   b. Review of resources.
   c. Convening of Standards Development Committee.
   d. Validation and approval of performance skills by Standards Development Committee.
   e. Review and approval of the skill standards by the Subcouncil.
   f. Approval of the skill standards by the Subcouncil.
   g. Endorsement of the skill standards by the Illinois Nurserymen's Association.

2. Lists of Agriculture and Natural Resources Subcouncil and Standards Development Committee members are in Appendixes C and D, respectively.

B. Industry Commitment for Marketing

The Agriculture and Natural Resources Subcouncil is committed to marketing and obtaining support and endorsement from the business community impacted by these skill standards.

The subcouncil will encourage the availability of occupational skill standards to the public including learners, parents, workers, educators at all levels, employers and industry organizations.

The Illinois Nurserymen's Association has submitted a letter endorsing the occupational skill standards. This letter is available upon request from the Illinois State Board of Education. The Professional Plant Growers Association (PPGA) has also endorsed these standards and will aid in their dissemination.

A. Developing an Employment Plan

1. Match interests to employment area.
2. Match aptitudes to employment area.
3. Identify short-term work goals.
4. Match attitudes to job area.
5. Match personality type to job area.
6. Match physical capabilities to job area.
7. Identify career information from counseling sources.
8. Demonstrate a drug-free status.

B. Seeking and Applying for Employment Opportunities

1. Locate employment opportunities.
2. Identify job requirements.
3. Locate resources for finding employment.
4. Prepare a resume.
5. Prepare for job interview.
6. Identify conditions for employment.
7. Evaluate job opportunities.
8. Identify steps in applying for a job.
9. Write job application letter.
10. Write interview follow-up letter.
11. Complete job application form.
12. Identify attire for job interview.

C. Accepting Employment

1. Apply for social security number.
2. Complete state and federal tax forms.
3. Accept or reject employment offer.
4. Complete employee's Withholding Allowance Certificate Form W-4.

D. Communicating on the Job

1. Communicate orally with others.
2. Use telephone etiquette.
3. Interpret the use of body language.
4. Prepare written communication.
5. Follow written directions.
6. Ask questions about tasks.

E. Interpreting the Economics of Work

1. Identify the role of business in the economic system.
2. Describe responsibilities of employee.
3. Describe responsibilities of employer or management.
4. Investigate opportunities and options for business ownership.
5. Assess entrepreneurship skills.

F. Maintaining Professionalism

1. Participate in employment orientation.
2. Assess business image, products and/or services.
3. Identify positive behavior.
4. Identify company dress and appearance standards.
5. Participate in meetings in a positive and constructive manner.
6. Identify work-related terminology.
7. Identify how to treat people with respect.

G. Adapting to and Coping with Change	1. Identify elements of job transition. 2. Formulate transition plan. 3. Identify implementation procedures for a transition plan. 4. Evaluate the transition plan. 5. Exhibit ability to handle stress. 6. Recognize need to change or quit a job. 7. Write a letter of resignation.
H. Solving Problems and Critical Thinking	1. Identify the problem. 2. Clarify purposes and goals. 3. Identify solutions to a problem and their impact. 4. Employ reasoning skills. 5. Evaluate options. 6. Set priorities. 7. Select and implement a solution to a problem. 8. Evaluate results of implemented option. 9. Organize workloads. 10. Assess employer and employee responsibility in solving a problem.
I. Maintaining a Safe and Healthy Work Environment	1. Identify safety and health rules/procedures. 2. Demonstrate the knowledge of equipment in the workplace. 3. Identify conservation and environmental practices and policies. 4. Act during emergencies. 5. Maintain work area. 6. Identify hazardous substances in the workplace.
J. Demonstrating Work Ethics and Behavior	1. Identify established rules, regulations and policies. 2. Practice cost effectiveness. 3. Practice time management. 4. Assume responsibility for decisions and actions. 5. Exhibit pride. 6. Display initiative. 7. Display assertiveness. 8. Demonstrate a willingness to learn. 9. Identify the value of maintaining regular attendance. 10. Apply ethical reasoning.
K. Demonstrating Technological Literacy	1. Demonstrate basic keyboarding skills. 2. Demonstrate basic knowledge of computing. 3. Recognize impact of technological changes on tasks and people.
L. Maintaining Interpersonal Relationships	1. Value individual diversity. 2. Respond to praise or criticism. 3. Provide constructive praise or criticism. 4. Channel and control emotional reactions. 5. Resolve conflicts. 6. Display a positive attitude. 7. Identify and react to sexual intimidation/harassment.
M. Demonstrating Teamwork	1. Identify style of leadership used in teamwork. 2. Match team member skills and group activity. 3. Work with team members. 4. Complete a team task. 5. Evaluate outcomes.

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